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(FILE 'HOME' ENTERED AT 10:51:48 ON 20 FEB 2001)

FILE 'USPATFULL' ENTERED AT 10:51:59 ON 20 FEB 2001

L1 1 S US5978732/PN
L2 47870 S VOICE
L3 1 S L1 AND L2
L4 21075 S HIERARCH?
L5 1 S L1 AND L4
L6 3123 S VOICE RECOGNIT?
L7 436 S L4 AND L6
L8 25 S L4 (P) L6
L9 4 S L7/TI,AB
L10 3443 S JUDGING MEANS
L11 1 S L7 AND L10
L12 79434 S JUDG?
L13 1 S L12 AND L8
L14 1 S US5377303/PN
L15 5102 S GPS
L16 2 S L8 AND L15
L17 1 S US6061003/PN
L18 1 S L4 AND L17
L19 335895 S COMPARAT?
L20 395444 S L12 OR L19
L21 0 S L17 AND L20
L22 2226 S HIERARCH? (2A) (MEMORY OR STORAGE###)
L23 1 S L22 (P) L6
L24 6 S L22 AND L15
L25 0 S L24 AND L6
L26 4 S L24 AND L2

=> dis 1- pn,ti,ab

YOU HAVE REQUESTED DATA FROM 4 ANSWERS - CONTINUE? Y/(N):Y

L26 ANSWER 1 OF 4 USPATFULL

PI US 6104980 20000815

TI Vehicular operation processing system

AB A vehicular operation processing system has a memory card for storing coordinates of a plurality of check point sets, each of which is composed of a set of check points, and an ECU for, when determining

that a vehicle has approached to any one of the check point sets based on

the coordinate of a current vehicle position and the coordinate of the

check point set, detecting a next check point based on a relation between

each of check points contained in that check point set and a check point detected in the last time and performing associated processes such as a voice guidance and automatic sampling of operation record for that check point.

L26 ANSWER 2 OF 4 USPATFULL

PI US 5978732 19991102

TI On-vehicle path guide apparatus and path search method
AB In an on-vehicle path guide apparatus and a path search method, by
using path search network data and path search index data, path search index
data searching device searches for a recommended path from a current
position of an own vehicle to a set destination in stages and at high
speed so as to guide a passenger. The data are selectively used
according to a distance to the destination to efficiently search for
the recommended path. The path search index data has a hierarchical
structure, and a small capacity memory is mounted.

L26 ANSWER 3 OF 4 USPATFULL

PI US 5839088 19981117

TI Geographic location referencing system and method

AB A method and apparatus for defining grid and proprietary addresses of
selected locations within a geographical area is described,
characterized in that the grid addresses are defined in relation to a
grid and can be easily converted to global coordinates defined in
relation to a known global referencing system, and the proprietary
addresses are unique to the geographical area.

L26 ANSWER 4 OF 4 USPATFULL

PI US 5630072 19970513

TI Relia process: integrated relational object unit identification and
location addressing processes

AB Automatic processes for relational identification and recording of
object units and their locations, in conjunction with traditional
Hierarchy Coded Location Addressing, to directly support tracking,
configuration management of diversified hierarchical object unit

systems
and their components.

L26 ANSWER 2 OF 4 USPATFULL

SUMM In the conventional on-vehicle path guide apparatus shown in FIG. 41, processing is carried out to retrieve depending upon the data such as road traffic information, and a recommended path obtained as a result

of

processing is provided for the passenger. For this purpose, the recommended path is retrieved and extracted by sequentially executing the following three steps: the first step of determining candidate

paths

between a current position and a destination, the second step of retrieving a path in which a predetermined condition is met from the candidate paths, and the third step of extracting the recommended path from the paths detected as a result of retrieval in the second step depending upon the various types of traffic information and a path selecting condition. Subsequently, for example, the resultant recommended path and the various types of road traffic information are visually displayed on a display unit such as liquid crystal display or CRT display, or are provided for the passenger through voice via speaker or the like.

SUMM According to another preferred embodiment of the present invention, there is provided an on-vehicle path guide apparatus in which path search hierarchical index data including hierarchical path information

to

each area is stored in path search **hierarchical** index data **storage** means, and path search hierarchical index data searching means searches for a recommended path from a main road closest to a current position of an own vehicle to a main road closest to a destination at high speed by using the path search hierarchical index data.

SUMM According to another preferred embodiment of the present invention, there is provided an on-vehicle path guide apparatus in which path search index data stored in path search index data storage means or

path

search hierarchical index data stored in path search **hierarchical** index data **storage** means includes, for example, data showing that a toll road should preferentially be selected, data showing that the toll road should not preferentially be selected, and data showing that a path leading to specified facilities should preferentially be selected, and in view of the priority data desired by a passenger, path search index data searching means or path search hierarchical index data searching means searches for the recommended path at high speed.

DETD It must be noted that a structure of the current position detecting means 1 in the on-vehicle path guide apparatus shown in FIG. 1 and a current position detecting system should not be limited as long as the current position of a vehicle can be provided. For example, the present invention may employ an apparatus using a **GPS** receiver disclosed in JP-A 63/171377, or an apparatus to detect the position of the vehicle by using a distance sensor, a direction sensor, and map

data

disclosed in JP-A 63/148115.

DETD FIG. 2 is a block diagram showing a specific configuration of the on-vehicle path guide apparatus according to the embodiment 1 shown in FIG. 1. In the drawing, reference numeral 21 means a **GPS** receiver, 22 is an operating portion, 23 is a control portion, 24 is an

input circuit, 25 is a memory (working memory) used at a time of, for example, calculation of the recommended path, 26 is a CPU, 27 is an output circuit, and 28 is a road network data storage portion including the path search road network data storage means 6 and the path search index data storage means 7 shown in FIG. 1. Reference numeral 29 means

a

display portion.

DETD The GPS receiver 21 corresponding to the current position detecting means 1 receives radio waves emitted from GPS (Global Positioning System) satellites, and transfers received information to the control portion 23. The operating portion 22 corresponding to the destination setting means 2 includes an input equipment such as key switch, light-pen, or infrared ray touch switch, and transmits a control signal generated depending upon inputted information to the control portion 23. The memory 25 serves as a

working

area for operation.

DETD With respect to the path outputted in step ST912, a direction of travel is indicated to the passenger through the indicating means 8. An indicate method may include various methods of, for example, displaying on displaying means a message: "Turn to the right beyond this," providing the message for the passenger as a voice message through a speaker, displaying on the indicating means 8 an arrow

showing

the direction of travel, displaying an enlarged diagram of an intersection, and indicating the message to the passenger by a combination of the indicating means 8, the speaker, and so forth. FIG. 40 shows illustrative indication of the indicating means 8 (step

ST913).

DETD FIG. 12 is a block diagram showing an on-vehicle path guide apparatus according to the embodiment 5 of the present invention. In the drawing, reference numeral 125 means path search hierarchical index data searching means, and 127 is path search **hierarchical** index data **storage** means. Further, reference numeral 121 means current position detecting means, 122 is destination setting means (setting means), 123 is path search control means, 126 is path search road network data storage means, and 128 is indicating means. These component parts have the same functions as those of the current

position

detecting means 1, the destination setting means 2, the path search control means 3, and indicating means 8, and descriptions thereof are omitted.

DETD The path search hierarchical index data searching means 125 searches for

a recommended path between two points set by the path search control means 123 by using path search hierarchical index data stored in the path search **hierarchical** index data **storage** means 127. Specifically, in one search method, when data shown in FIG. 14 is index data of map data shown in FIG. 4, it can be understood that a vehicle may travel toward a link 15 while referring to index data of a node m1 connected to a link 11 in order to move from the link 11 in a direction of A. Further, data of a node m2 connected to the link 15 is referred to find the next connecting link. This is recursively repeated to determine a route to the destination. At the time, if higher order index data is found at each node of path search hierarchical index data which will be described infra, the operation moves up to the higher order index data to continue the search.

DETD Instead of the road network data storage portion 28 in FIG. 2, the path search **hierarchical** index data **storage** means 127

contains path search hierarchical index data from each point to each intersection, including data as shown in FIG. 14 and data as shown in FIG. 15. FIG. 15 is positioned as higher order index data of FIG. 14.

DETD In the on-vehicle path guide apparatus according to the embodiment 5, the path search hierarchical index data stored in the path search **hierarchical** index data **storage** means 127 and the path

search road network data stored in the path search road network data storage means 126 are used to search for a recommended path from a current position of an own vehicle to a destination set by the passenger in stages, and the recommended path obtained by the search is rapidly indicated through the indicating means 128.

DETD In FIG. 12, the path search hierarchical index data stored in the path search **hierarchical** index data **storage** means 127 and the path search road network data stored in the path search road network data storage means 126 are used to search for the recommended path from the current position of the own vehicle to the destination set by the passenger in stages, and the recommended path obtained by the search is indicated to the passenger. The operation will be described with reference to the flowchart shown in FIG. 3.

DETD Subsequently, path search road network data and path search index data corresponding to the current position obtained in step ST302 are read from the path search road network data storage means 126 and the path search **hierarchical** index data **storage** means 127 (step ST303).

DETD FIG. 18 is a block diagram showing an on-vehicle path guide apparatus according to the embodiment 8. In the drawing, reference numeral 184 means recommended path storage means, 189 is path deviation detecting means, and 190 is path search road network data searching means. Further, current position detecting means 181, destination setting means (setting means) 182, path search control means 183, path search road network data storage means 186, indicating means 188, path search hierarchical index data searching means 185, and path search **hierarchical** index data **storage** means 187 are identical with the current position detecting means 1, the destination setting means 2, the path search control means 3, the path search road network data storage means 6, and the indicating means 8 in the on-vehicle path guide apparatus according to the embodiment 1 shown in FIG. 1 and the path search hierarchical index data searching means 125 and the path search **hierarchical** index data **storage** means 127 in the on-vehicle path guide apparatus according to the embodiment 5 shown in FIG. 12. Therefore, descriptions thereof are

in the audio frequency range receives an audio command spoken by a person. A converter (20) converts the audio input to the receiver into an electrical signal. A processor (22) processes the electrical signal to determine if the person who spoke is a person previously authorized to operate the appliance. A controller (32) performs the function requested by the person who spoke only if the person is a previously authorized person. If more than one person directs a command to the programmer, the sequence with which the commands are executed is determined based on a voice **hierarchy**.

L9 ANSWER 3 OF 4 USPATFULL

AB A system and method for organizing and accessing multi-media messages from a displayless interface (112a, 112b). According to one embodiment, **voice recognition** techniques are used to allow the user to identify and create a **hierarchical** organization (200) for stored messages.

L9 ANSWER 4 OF 4 USPATFULL

TI Word and pattern recognition through overlapping **hierarchical** tree defined by relational features

AB A voice recognizing method in which a plurality of **voice recognition** objective words are provided. Scores are accumulated for an unknown input voice signal as compared to the **voice recognition** objective words by using parameters which are calculated in advance. Upon receipt of an unknown voice signal, a corresponding **voice recognition** objective word is extracted and recognized. The **voice recognition** objective words are structured into an overlapping **hierarchical** structure by using correlation values between each pair of **voice recognition** objective words. This correlation may be computed from acoustic features, HMM parameters or the like. Score calculation

is performed on the unknown input voice signal by using a dictionary of

the **voice recognition** objective words structured in the **hierarchical** structure. Upon preliminary recognition, the dictionary of the **voice recognition** objective words is resorted without recalculation of the correlation values.

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=> s 14 and 16

L7 436 L4 AND L6

=> s 14 (p) 16

L8 25 L4 (P) L6

=> s 17/ti,ab

958 HIERARCH?/TI
2641 HIERARCH?/AB
2267 VOICE/TI
2700 RECOGNIT?/TI
92 VOICE RECOGNIT?/TI
((VOICE(W)RECOGNIT?)/TI)
7216 VOICE/AB
5529 RECOGNIT?/AB
240 VOICE RECOGNIT?/AB
((VOICE(W)RECOGNIT?)/AB)
L9 4 ((HIERARCH?/TI,AB) AND (VOICE RECOGNIT?/TI,AB))

=> dis hit 1-

YOU HAVE REQUESTED DATA FROM 4 ANSWERS - CONTINUE? Y/(N):y

L9 ANSWER 1 OF 4 USPATFULL

AB Camera apparatus and method with provision for selection of image annotations to be recorded with captured images. Camera user initiated keywords associated with groupings of annotations are inputted to the camera via **voice recognition** or handwriting recognition to search for related annotations using group codes which may also include **hierarchical** rank classification codes. Annotations pre-recorded in memory and having codes matching those of the inputted keywords are displayed on a camera display device to allow the camera user to rapidly select a desired annotation for recording of the associated code in connection with the captured image. The code is then utilized in known manner during photofinishing to print the selected annotation on the front or back of the reproduced image print.

L9 ANSWER 2 OF 4 USPATFULL

TI Appliance control programmer using **voice recognition**
AB A voice activated programmer (10) controlling the operation of an appliance such as a television (T) or VCR (V). A receiver (12) operating